

**REMARKS**

Reconsideration of this application, as amended, is respectfully requested.

**Status of related applications**

The Applicants wish to call the Examiner's attention to co-pending continuation-in-part application No. 10/125,194. At least two office actions have already issued in that application. The Applicants also wish to call the Examiner's attention to other co-pending applications and issued patents that are related to nanoparticle compositions. One or more office actions have issued in most of these cases.

**Status of Information disclosure statements**

The Applicants have filed a total of fourteen (14) information disclosure statements and received copies of the Examiner's executed PTO 1449 forms for most of the disclosure statements except for the following: Information disclosure statement and 3<sup>rd</sup>, 5<sup>th</sup>, 12<sup>th</sup>, and 13<sup>th</sup> supplemental information disclosure statements. Copies of the aforementioned statements with the PTO 1449 forms are attached. Also attached are copies of the returned postcards bearing PTO stamped dates acknowledging receipt of the aforementioned documents with references. The Applicants request that the Examiner execute the included PTO 1449 forms and return a copy of the same to the undersigned representative. If the Examiner would like another copy of the cited references, the Applicants request that the Examiner contact the undersigned representative.

### **Status of the claims**

Claims 1-85 were pending in this application and were subject to a four (4) way restriction. The Applicants elected Group I (claims 1-42). In order to expedite the prosecution of this application, the Applicants cancelled the non-elected claims (claims 43 to 84). Claims 8, 13, and 32 were amended to correct for grammatical or typographical errors. Support for the amendment of claim 13 can be found in claim 14. No new matter has been introduced into the application as a result of the present amendment.

### **Rejection under 35 U.S.C. section 112, second paragraph, for indefiniteness**

Turning now to the Office action, the Examiner had objected to claims 2-6, 9-12, 14, 16, 17, 20-25, 27-30, 32, 33, and 36-40 but had indicated that these claims would be allowable if converted into independent claim format. The Examiner, however, rejected to claim 1, 7, 8, 15, 18, 19, 31, 41 and 42 for alleged indefiniteness under 35 U.S.C. section 112, second paragraph. Applicants respectfully traverse this rejection and submit that an ordinary skilled artisan would understand the meaning of the terms based on the teachings of the specification.

With respect to claim 1, the Examiner alleged that the term “nanoparticle” is open to many interpretations. Contrary to the Examiner’s position, the Applicants submit that an ordinary skilled artisan will understand what is meant by the term “nanoparticle” based on the teachings of the specification, for instance, on page 4, lines 27 to page 7, line 5.

Regarding claim 8, the Examiner alleged that the recitation “them” and “a selected property or properties” is indefinite. However, claim 8 has been amended and thus the Applicant submits that the section 112, second paragraph, rejection is moot.

With respect to claim 13, the Examiner alleged that the recitation “each” and “silicon-containing analogs” are indefinite. However, claim 13 has been amended to conform the language to that of claim 14. Furthermore, an ordinary skilled artisan would understand the meaning of the phrase “silicon-containing analogs” (also in claim 14) based on the teachings of the specification, for instance, at page 15, lines 3-5 and page 15, line 28 to page 16, line 2.

Regarding claims 1, 7, 8, 15, 18, 19, 31, 41 and 42, the phrase “a type of” has been described in the specification, for instance, at page 22, line 27-31.

In light of the discussion above, the Applicant submits that the section 112, second paragraph, rejection is moot. The Applicants further submit that the claims are in allowable condition.

Reconsideration of this application is respectfully requested and a favorable determination is earnestly solicited. The Examiner is invited to contact the Applicants’ undersigned representative if the Examiner believes this would be helpful in expediting the prosecution of this application.

Dated: August 12, 2004

Respectfully submitted,



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Emily Miao  
Reg. No. 35,285

McDonnell Boehnen Hulbert & Berghoff LLP  
300 South Wacker Drive, Suite 3200  
Chicago, IL 60606  
Tel. No. 312-913-0001  
Fax No. 312-913-0002



### APPENDIX A

<b>ATTY Case No.</b>	<b>Serial No./ Filing Date</b>	<b>Inventors/Title</b>	<b>Status</b>
<b>00-653-G</b>	U.S. 10/794,741 Filed 3/5/04	Mirkin, Letsinger, Mucic, Storhoff, Elghanian, Taton, Garamella, Li, Park/ NANOPARTICLES HAVING OLIGONUCLEOTI DES ATTACHED THERETO AND USES THEREFORE	ALLOWED
<b>00-713-B1</b>	09/923,625 Filed 8/7/01	Mirkin, Letsinger, Mucic, Storhoff, Elghanian/ NANOPARTICLES HAVING OLIGONUCLEOTI DES ATTACHED THERETO AND USES THEREFOR	ALLOWED
<b>00-713-C</b>	09/344,667, filed 6/25/99	Mirkin, Letsinger, Mucic, Storhoff, Elghanian/ NANOPARTICLES HAVING OLIGONUCLEOTI DES ATTACHED THERETO AND USES THEREFORE	U.S. Patent No. 6,361,944, issued 3/26/02
<b>00-713-I</b>	U.S.S.N 09/603,830 Filed 6/26/00	Mirkin, Letsinger, Mucic, Storhoff, Elghanian, Taton; NANOPARTICLES HAVING OLIGONUCLEOTI DES ATTACHED THERETO AND USES THEREFOR	U.S. Patent No. 6,506,564, issued 1/14/03
<b>00-713-I-1</b>	09/961,949 9/20/01	Mirkin, Letsinger, Mucic, Storhoff, Elghanian, Taton;	U.S. Patent No. 6,582,921, issued June 24, 2003

<b>ATTY Case No.</b>	<b>Serial No./ Filing Date</b>	<b>Inventors/Title</b>	<b>Status</b>
		NANOPARTICLES HAVING OLIGONUCLEOTI DES ATTACHED THERETO AND USES THEREFOR	
<b>00-713-I-2</b>	09/957,318 9/20/01	See 00-713-I-1	U.S. Patent No. 6,759,199, issued 7/6/04
<b>00-713-I-3</b>	09/957,313 9/20/01	See 00-713-I-1	U.S. Patent No. 6,645,721, issued 11/11/03
<b>00-713-I-4</b>	09/966,491 9/28/01	See 00-713-I-1	U.S. Patent No. 6,610,491, issued August 26, 2003
<b>00-713-I-5</b>	09/966,312 9/28/01	See 00-713-I-1	U.S. Patent No. 6,673,548, issued January 6, 2004
<b>00-713-I-6</b>	09/967,409 9/28/01	See 00-713-I-1	U.S. Patent No. 6,740,491, issued May 24, 2004
<b>00-713-I-7</b>	09/974,500 10/10/01	See 00-713-I-1	U.S. Patent No. 6,709,825, issued March 23, 2004
<b>00-713-I-8</b>	09/974,007 10/10/01	See 00-713-I-1	PENDING
<b>00-713-I-9</b>	09/973,638 10/10/01	See 00-713-I-1	ALLOWED
<b>00-713-I-10</b>	09/973,788 10/10/01	See 00-713-I-1	U.S. Patent No. 6,720,411, issued April 13, 2004
<b>00-713-I-11</b>	09/975,062 10/11/01	See 00-713-I-1	U.S. Patent No. 6,677,122, issued January 13, 2004
<b>00-713-I-12</b>	09/975,376 10/11/01	See 00-713-I-1	PENDING
<b>00-713-I-13</b>	09/975,384 10/11/01	See 00-713-I-1	PENDING

<b>ATTY Case No.</b>	<b>Serial No./ Filing Date</b>	<b>Inventors/Title</b>	<b>Status</b>
00-713-I-14	09/975,498 10/11/01	See 00-713-I-1	ALLOWED
00-713-I-15	09/975,059 11/11/01	See 00-713-I-1	ALLOWED
00-713-I-16	09/976,601 10/12/01	See 00-713-I-1	PENDING
00-713-I-17	09/976,968 10/12/01	See 00-713-I-1	ALLOWED
00-713-I-18	09/976,971 10/12/01	See 00-713-I-1	U.S. Patent No. 6,682,895, issued 1/27/04
00-713-I-19	09/976,863 10/12/01	See 00-713-I-1	PENDING
00-713-I-20	09/976,577 10/12/01	See 00-713-I-1	U.S. Patent No. 6,720,147, issued April 13, 2004
00-713-I-21	09/976,618 10/12/01	See 00-713-I-1	ALLOWED
00-713-I-22	09/981,344 10/15/01	See 00-713-I-1	U.S. Patent No. 6,777,186, issued August 17, 2004
00-713-I-23	09/976,900 10/12/01	See 00-713-I-1	PENDING
00-713-I-24	09/976,617 10/12/01	See 00-713-I-1	U.S. Patent No. 6,730,269, filed May 4, 2004
00-713-I-25	09/976,378 10/12/01	See 00-713-I-1	PENDING
00-713-i-26	10/410,324 04/10/03	See 00-713-I-1	PENDING
00-713-L	U.S.S.N. 09/693,005 Filed 10/20/00	Mirkin, Letsinger, Mucic, Storhoff, Elghanian/	U.S. Patent No. 6,495,324, issued 12/17/02

ATTY Case No.	Serial No./ Filing Date	Inventors/Title	Status
		NANOPARTICLES HAVING OLIGONUCLEOTI DES ATTACHED THERE TO AND USES THEREFORE	
<b>00-713-M</b>	U.S.S.N. 09/693,352 Filed 10/20/00	Mirkin, Letsinger, Mucic, Storhoff, Elghanian/ NANOPARTICLES HAVING OLIGONUCLEOTI DES ATTACHED THERE TO AND USES THEREFORE	U.S. Patent No. 6,417,340, issued 7/9/02
<b>00-714-G</b>	U.S. 09/830,620 Filed 8/15/01	Mirkin, Nguyen/ NANOPARTICLES WITH POLYMER SHELLS	PENDING
<b>00-715-A</b>	U.S. 09/760,500 Filed 1/12/01	Mirkin, Letsinger, Mucic, Storhoff, Elghanian, Taton; Garamella, Li/ METHOD OF ATTACHING OLIGONUCLEOTI DES TO NANOPARTICLES AND PRODUCTS PRODUCED THEREBY	U.S. Patent No. 6,767,702, issued July 27, 2004
<b>00-715-B</b>	U.S. 10/716,829 Filed 11/18/03	Mirkin, Letsinger, Mucic, Storhoff, Elghanian, Taton; Garamella, Li/ METHOD OF ATTACHING OLIGONUCLEOTI DES TO NANOPARTICLES AND PRODUCTS PRODUCED THEREBY	Pending
<b>00-1085-A</b>	U.S.S.N.	Mirkin, Letsinger,	U.S. Patent No.

<b>ATTY Case No.</b>	<b>Serial No./ Filing Date</b>	<b>Inventors/Title</b>	<b>Status</b>
	09/820,279 Filed 3/28/01	etc./ METHOD AND MATERIALS FOR ASSAYING BIOLOGICAL MATERIALS	6,750,016, issued June 15, 2004
<b>00-1085-G</b>	U.S.S.N. 10/640,618 Filed 8/13/03	Mirkin, Letsinger, etc./ METHOD AND MATERIALS FOR ASSAYING BIOLOGICAL MATERIALS	Pending
<b>00-1086-A</b>	U.S. 09/903,461 Filed 7/11/01	Letsinger, Garimella/ METHOD OF DETECTION BY ENHANCEMENT OF SILVER STAINING	U.S. Patent No. 6,602,669, Filed 8/5/03
<b>00-1272-C</b>	U.S.S.N. 10/008,978 Filed 12/7/01	Mirkin, Letsinger, Mucic, Storhoff, Elghanian, Taton, Garimella, Li, Park, Lu/ NANOPARTICLES HAVING OLIGONUCLEOTI DES ATTACHED THERE TO AND USES THEREOF	PENDING
<b>01-565-A</b>	USSN 10/125,194 Filed 4/18/02	Mirkin, Nguyen, Watson, Park/ OLIGONUCLEOTI DE-MODIFIED ROMP POLYMERS AND CO- POLYMERS	PENDING
<b>01-599-A</b>	U.S.S.N. 10/291,291 Filed 11/08/02	Storhoff/NOVEL THIOL-BASED METHOD FOR ATTACHING OLIGONUCLEOTI DES TO NANOPARTICLES	PENDING
<b>01-661-A</b>	U.S.S.N. 10/034,451	Mirkin, Cao, Jin/ DNA-MODIFIED	PENDING



ATTY Case No.	Serial No./ Filing Date	Inventors/Title	Status
	Filed 12/28/01	CORE-SHELL AG/AU NANOCRYSTALS	
01-661-C	U.S.S.N. 10/153,483 Filed 5/22/02	Mirkin, Cao, Jin/ DNA-MODIFIED CORE-SHELL AG/AU NANOCRYSTALS	PENDING
01-661-E	U.S.S.N. 10/397,579 3/26/03	Mirkin, Cao, Jin/ DNA-MODIFIED CORE-SHELL AG/AU NANOCRYSTALS	PENDING
01-1565-A	U.S.S.N. 10/266,983 Filed 10/08/02	Park, Taton, Mirkin/ARRAY- BASED ELECTRICAL DETECTION OF DNA USING NANOPARTICLE PROBES	PENDING
01-1633-A	U.S.S.N. 10/266,983 Filed 10/8/02	Park, Taton, Mirkin/NANOPARI CLES HAVING OLIGONUCLEOTI DES ATTACHED THERETO AND USES THEREFOR	PENDING
01-1705-A	U.S.S.N. 10/108,211 Filed 3/27/02	Nam, Park, Mirkin/BIO- BARCODES BASED ON OLIGONUCLEOTI DE-MODIFIED NANOPARTICLES	PENDING
02-338-B	USSN 10/172,428 Filed 6/14/02	Cao, Jin, Nam, Mirkin/MULTIHA NNEL DETECTION USING NANOPARTICLE PROBES WITH RAMAN SPECTROSCOPIC FINGERPRINTS	PENDING

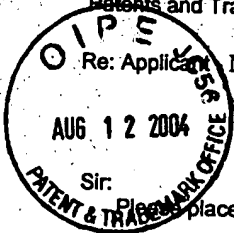
ATTY Case No.	Serial No./ Filing Date	Inventors/Title	Status
02-338-C	10/431,341 5/7/03	Cao, Jin, Nam, Mirkin/MULTI CHANNEL DETECTION USING NANOPARTICLE PROBES WITH RAMAN SPECTROSCOPIC FINGERPRINTS	PENDING
02-1227-A	10/735,357 Filed 12/12/03	DIRECT SNP DETECTION WITH UNAMPLIFIED NUCLEIC ACID USING NANOPARTICLE PROBES	PENDING
03-214-A	10/789,831 Filed 2/27/04	LABEL-FREE GENE EXPRESSION PROFILING WITH UNIVERSAL NANOPARTICLE PROBES IN MICROARRAY ASSAY FORMAT	PENDING
03-466-C	10/854,848 Filed 5/27/04	METHOD FOR DETECTING ANALYTES BASED ON EVANESCENT ILLUMINATION AND SCATTER- BASED DETECTION OF NANOPARTICLE PROBE COMPLEXES	PENDING
03-666-E	10/877,750 Filed 6/25/04	BIOBARCODE	PENDING

Hon. Commissioner of Patents and Trademarks S/N 09/830,620

Atty: EM

Re: Applicant Mirkin, et al.

Case No. 00-714-G

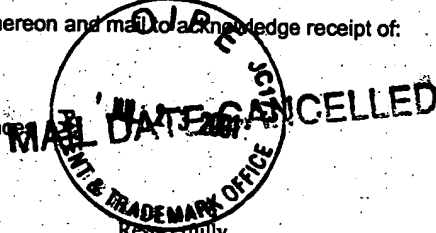


**NANOPARTICLES WITH POLYMER SHELLS**  
Date Mailed: July 20, 2001

Sir:

Please place the Patent Office receipt stamp hereon and mail to acknowledge receipt of:

- Transmittal Letter
- Information Disclosure Statement
- U.S. PTO Form 1449 with copies of 16 references



Fee Enclosed  
\$ 0.00



Respectfully,  
McDonnell Bochnen Hulbert & Berghoff  
Attorney for Applicant



PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
(Case No. 00-714-G)

In re Application of:	)	
	)	
Chad A. Mirkin, et al.	)	
	)	Examiner: TBA
Serial No.: 09/830,620	)	
	)	Group Art Unit: TBA
Filed: November 30, 1999	)	
	)	
For: NANOPARTICLES WITH POLYMER	)	
SHELLS	)	

**TRANSMITTAL LETTER**

Asst. Commissioner for Patents  
Washington, D.C. 20231

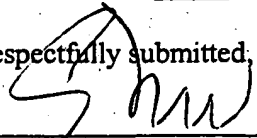
Sir:

In regard to the above identified application.

1. We are transmitting herewith the attached:
  - a) Information Disclosure Statement;
  - b) U.S. PTO 1449 Form with copies of 16 references; and
  - c) Return Postcard.
  
2. With respect to fees:
  - a) No fee is attached.
  - b) General Authorization: Please charge any underpayment or credit any overpayment our Deposit Account, No. 13-2490.
  
3. CERTIFICATE OF MAILING UNDER 37 CFR § 1.8: The undersigned hereby certifies that this Transmittal Letter and the paper, as described in paragraph 1 hereinabove, are being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to the Commissioner for Patents, Washington, D.C. 20231 on this 20 day of July, 2001.

Date: 7/20/01

Respectfully submitted,

  
 \_\_\_\_\_  
 Emily Miao  
 Registration No. 35,285



PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
(Our Case No. 00-714-G)

In re Application of: )  
)  
Chad A. Mirkin, et al. )  
)  
Serial No. 09/830,620 ) Examiner: TBA  
)  
Filed: November 30, 1999 ) Art Unit: TBA  
)  
For: NANOPARTICLES WITH POLYMER )  
SHELLS )

Assistant Commissioner for Patents  
Washington, D.C. 20231

**INFORMATION DISCLOSURE STATEMENT**

Sir:

In order to comply with discretionary regulations 37 CFR §§1.97 and 1.98, attached hereto is Form PTO-1449, copies<sup>1</sup> of the documents listed thereon. These documents contain information which the Examiner may consider to be important in deciding whether to allow the present application to issue as a patent.

1. Mroczkowski, et al., U.S. Patent No. 5,284,748, issued 02/08/94.

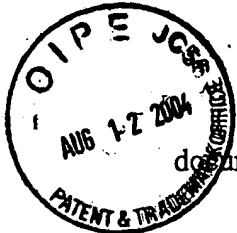
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<sup>1</sup>To the extent that a document is listed and no copy of same is attached, then such document is not at the present time available to the undersigned or is available in the file of a parent application. If a listed document is not in the English language and an English translation is readily available, such translation is also attached; if translation is not attached it is not readily available to the undersigned. If a foreign language patent document is cited, and an English language equivalent is known to the undersigned, then such equivalent patent is also cited on the attached form along with the corresponding foreign language patent and a connecting arrow indicated therebetween; if no such English language equivalent is cited, then none is known to undersigned.



2. Engelhardt, et al., U.S. Patent No. 5,288,609, issued 02/22/94.
3. Hainfield, et al., U.S. Patent No. 5,360,895, issued 11/01/94.
4. Kidwell, et al., U.S. Patent No. 5,384,265, issued 01/24/95.
5. Beebe, et al., U.S. Patent No. 5,472,881, issued 12/05/95.
6. Stimpson, et al., U.S. Patent No. 5,599,668, issued 02/04/97.
7. Kidwell, et al., U.S. Patent No. 5,637,508, issued 06/10/97.
8. Alivisatos, et al., U.S. Patent No. 5,751,018, issued 05/12/98.
9. Hansen, et al., U.S. Patent No. 5,939,021, issued 08/17/99.
10. Weiss, et al., U.S. Patent No. 5,990,479, issued 11/23/99.
11. WO 93/10564, published 27 May 1993.
12. WO 98/10289, published 12 March 1998.
13. WO 99/23258, published 14 May 1999.
14. WO 99/21934, published 06 May 1999.
15. WO 99/20789, published 29 April 1999.
16. O.D. Velev, et al., "In Situ Assembly of Collordal Particles into Miniaturized Biosensors," *Langmuir*, May 25, 1999, Vol. 15, No. 11, pp. 3693-3698 (May 25, 1999)

In accordance with MPEP Sections 609 and 707.05(b), it is requested that each document cited (including any cited in applicant's specification which is not repeated on the attached Form PTO-1449) be given thorough consideration and that it be cited of record in the prosecution history of the present application by initialing on Form PTO-1449. Such initialing is requested even if the Examiner does not consider a cited document to be sufficiently pertinent to use in a rejection, or otherwise does not consider it to be prior art for any reason, or even if the Examiner does not believe that the guidelines for citation have been fully complied with. This is requested so that each



document becomes listed on the face of the patent issuing on the present application.

The present Disclosure Statement is being submitted in compliance with 37 CFR 1.56 insofar as an Examiner might consider any of the cited documents important in deciding whether to allow the application to issue as a patent, but the citation of each document is not to be construed as an admission that such document is necessarily relevant or prior art. No representation is intended that the cited documents represent the results of a complete search, and it is anticipated that the Examiner, in the normal course of examination, will make an independent search and will determine the best prior art consistent with 37 CFR 1.104(a) and 1.106(b) and, in the course of each search, will review for relevance every document cited on the attached form even if not initialed.

Early and favorable consideration is earnestly solicited.

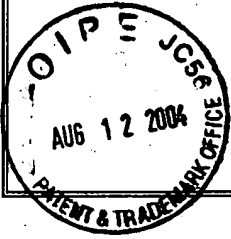
Respectfully submitted,

Emily Miao  
Registration No. 35,285

Dated: 7/20/01

McDonnell Boehnen Hulbert & Berghoff  
300 South Wacker Drive  
Chicago, Illinois 60606  
Telephone: (312) 913-0001  
Facsimile: (312) 913-0002

Form PTO-1449	S. Department of Commerce Patent and Trademark Office	Atty. Docket No. 00-714-G	Serial No. 09/830,620
<b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b>		Applicant: Chad A. Mirkin, et al.	
		Filing Date: November 30, 1999	Group: TBA



**U.S. PATENT DOCUMENTS**

Examiner Initial		Document Number	Date	Name	Class	Subclass	Filing Date
	1.	5,284,748	02/22/94	Engelhardt, et al.			
	2.	5,288,609	02/08/94	Mroczkowski, et al.			
	3.	5,360,895	11/01/94	Hainfield, et al.			
	4.	5,384,265	01/24/95	Kidwell, et al.			
	5.	5,472,881	12/05/95	Beebe, et al.			
	6.	5,599,668	02/04/97	Stimpson, et al.			
	7.	5,637,508	06/10/97	Kidwell, et al.			
	8.	5,751,018	05/12/98	Alivisatos, et al.			
	9.	5,939,021	08/17/99	Hansen, et al.			
	10.	5,990,479	11/23/99	Weiss, et al.			

**FOREIGN PATENT DOCUMENTS**

		Document Number	Date	Country	Class	Subclass	Translation	
							Yes	No
	11.	WO 93/10564	27 May 93	PCT				
	12.	WO 98/10289	12 March 98	PCT				
	13.	WO 99/23258	14 May 99	PCT				
	14.	WO 99/21934	06 May 99	PCT				
	15.	WO 99/20789	29 April 99	PCT				

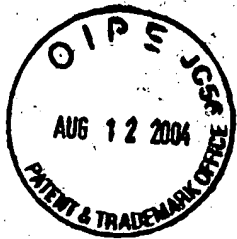
**OTHER DOCUMENTS - Including Author, Title, Date, Pertinent Pages, Etc.**

16.	O.D. Velev, et al., "In Situ Assembly of Colloidal Particles into Miniaturized Biosensors," <i>Langmuir</i> , Vol. 15, No. 11, pp. 3693-3698, May 25, 1999
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Examiner	Date Considered
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EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with any communication.





Hon. Commissioner of Patents and Trademarks S/N 09/830,620

Atty: EM

Re: Applicant - Mirkin, et al.

JC03 Rec'd PCT/PTO 24 JUL 2001 Case No. 00-714-G

NANOPARTICLES WITH POLYMER SHELLS

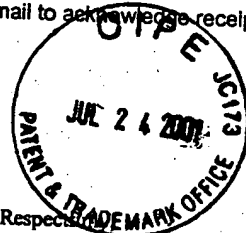
Date Mailed: July 20, 2001

Sir:

Please place the Patent Office receipt stamp hereon and mail to acknowledge receipt of:

- Transmittal Letter
- ~~TIPO~~ Supplemental Information Disclosure Statement
- U.S. PTO Form 1449 with copies of 60 references

Fee Enclosed \$ 0.00



Respectfully,  
McDonnell Boehnen Hulbert & Berghoff  
Attorney for Applicant



PATENT

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(Case No. 00-714-G)

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Chad A. Mirkin, et al.	)	
	)	Examiner: TBA
Serial No.: 09/830,620	)	
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For: NANOPARTICLES WITH POLYMER	)	
SHELLS	)	

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  - a) No fee is attached.
  - b) General Authorization: Please charge any underpayment or credit any overpayment our Deposit Account, No. 13-2490.
  
3. CERTIFICATE OF MAILING UNDER 37 CFR § 1.8: The undersigned hereby certifies that this Transmittal Letter and the paper, as described in paragraph 1 hereinabove, are being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to the Commissioner for Patents, Washington, D.C. 20231 on this 20 day of July, 2001.

Date: 7/20/01

Respectfully submitted,  
  
\_\_\_\_\_  
Emily Miao  
Registration No. 35,285



PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
(Our Case No. 00-714-G)

In re Application of:	)	
	)	
Chad A. Mirkin, et al.	)	
	)	
Serial No. 09/830,620	)	Examiner: TBA
	)	
Filed: November 30, 1999	)	Art Unit: TBA
	)	
For: NANOPARTICLES WITH POLYMER	)	
SHELLS	)	

Assistant Commissioner for Patents  
Washington, D.C. 20231

**THIRD SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT**

Sir:

In order to comply with discretionary regulations 37 CFR §§1.97 and 1.98, attached hereto is Form PTO-1449, copies<sup>1</sup> of the documents listed thereon. Attached is a late submission fee pursuant to 37 CFR 1.17(p) and 1.97(c). These documents contain information which the Examiner may consider to be important in deciding whether to allow the present application to issue as a patent.

1. Ullman et al., U.S. Patent No. 4,193,983 issued 03/18/80
2. Zuk et al., U.S. Patent No. 4,256,834 issued 03/17/81

<sup>1</sup>To the extent that a document is listed and no copy of same is attached, then such document is not at the present time available to the undersigned or is available in the file of a parent application. If a listed document is not in the English language and an English translation is readily available, such translation is also attached; if translation is not attached it is not readily available to the undersigned. If a foreign language patent document is cited, and an English language equivalent is known to the undersigned, then such equivalent patent is also cited on the attached form along with the corresponding foreign language patent and a connecting arrow indicated therebetween; if no such English language equivalent is cited, then none is known to undersigned.

3. Ullman et al., U.S. Patent No. 4,261,968 issued 04/14/81
4. Leuvering, U.S. Patent No. 4,313,734 issued 02/02/82
5. Litman et al., U.S. Patent No. 4,318,707 issued 03/09/82
6. Liu et al., U.S. Patent No. 4,650,770 issued 03/17/87
7. Ullman, U.S. Patent No. 4,713,348 issued 12/15/87
8. Olsen et al., U.S. Patent No. 4,853,335 issued 08/01/89
9. Kurn et al., U.S. Patent No. 4,868,104 issued 09/19/89
10. Henkens et al., U.S. Patent No. 5,255,064 issued 07/06/93
11. Shigekawa et al., U.S. Patent No. 5,294,369 issued 03/15/94
12. Shigekawa et al., U.S. Patent No. 5,384,073 issued 01/24/95
13. Kidwell et al., U.S. Patent No. 5,384,265 issued 01/24/95
14. Kossovsky et al., U.S. Patent No. 5,460,831 issued 10/24/95
15. Beebe et al., U.S. Patent No. 5,472,881 issued 12/05/95
16. Brooks, Jr. et al., U.S. Patent No. 5,514,602 issued 05/07/96
17. Hainfeld et al., U.S. Patent No. 5,521,289 issued 05/28/96
18. Gref et al., U.S. Patent No. 5,543,158 issued 08/06/96
19. Brooks, Jr. et al., U.S. Patent No. 5,571,726 issued 11/05/96
20. Kaushch et al., U.S. Patent No. 5,665,582 issued 09/09/97
21. Letsinger et al., U.S. Patent No. 5,681,943 issued 10/28/97
22. International Patent No. WO 89/06801 published 07/27/89
23. International Patent No. WO 97/40181 published 10/30/97
24. International Patent No. WO 98/04740 published 02/05/98
25. International Patent No. WO 99/23258 published 05/14/99

26. European Patent 0 630 974 A2 published 06/21/94
27. European Patent 0 667 398 A2 published 08/16/95
28. Alivisatos et al., "Organization of 'nanocrystal molecules' using DNA," *Nature*, Vol. 382, pp. 609-611 (1996)
29. Bain, et al., "Modeling Organic Surfaces with Self-Assembled Monolayers," *Angew. Chem. Int. Ed. Engl.*, Vol. 28, pp. 506-512 (1989)
30. Bradley, "The Chemistry of Transition Metal Colloids," *Clusters and Colloids: From Theory to Applications*, G. Schmid, Editor, BCH, Weinheim, New York, pp. 459-542 (1994)
31. Brust et al., "Novel Gold-Dithiol Nano-Networks with Non-Metallic Electronic Properties," *Adv. Mater.*, Vol. 7, pp. 795-797 (1995)
32. Chen et al., "A Specific Quadrilateral Synthesized from DNA Branched Junctions," *J. Am. Chem. Soc.*, Vol. 111, pp. 6402-6407 (1989)
33. Chen & Seeman, "Synthesis from DNA of a molecule with the connectivity of a cube," *Nature*, Vol. 350, pp. 631-633 (1991)
34. Chen et al., "Crystal Structure of a Four-Stranded Intercalated DNA: d(C<sub>4</sub>)<sup>††</sup>" *Biochem.*, Vol. 33, pp. 13540-13546 (1994)
35. Dagani, "Supramolecular Assemblies DNA to organize gold nanoparticles," *Chemical & Engineering News*, p. 6-7, August 19, 1996
36. Dubois & Nuzzo, "Synthesis, Structure, and Properties of Model Organic Surfaces," *Annu. Rev. Phys. Chem.*, Vol. 43, pp. 437-464 (1992)
37. Elghanian et al., "Selective Colorimetric Detection of Polynucleotides Based on the Distance-Dependent Optical Properties of Gold Nanoparticles," *Science*, Vol. 277, pp. 1078-1081 (1997)
38. Grabar et al., "Preparation and Characterization of Au Colloid Monolayers," *Anal. Chem.* Vol. 67, pp. 735-743 (1995)
39. Hacia et al., "Detection of heterozygous mutations in BRCA1 using high density oligonucleotide arrays and two-colour fluorescence analysis," *Nature Genet.*, Vol. 14, pp. 441-447 (1996)
40. Jacoby, "Nanoparticles change color on binding to nucleotide target," *Chemical & Engineering News*, p. 10, August 25, 1997

41. Letsinger et al., "Use of Hydrophobic Substituents in Controlling Self-Assembly of Oligonucleotides," *J. Am. Chem. Soc.*, Vol. 115, pp. 7535-7536 (1993)
42. Letsinger et al., "Control of Excimer Emission and Photochemistry of Stilbene Units by Oligonucleotide Hybridization," *J. Am. Chem. Soc.*, Vol. 116, pp. 811-812 (1994)
43. Marsh et al., "A new DNA nanostructure, the G-wire, imaged by scanning probe microscopy," *Nucleic Acids Res.*, Vol. 23, pp. 696-700 (1995)
44. Mirkin, "H-DNA and Related Structures," *Annu. Review Biophys. Biomol. Struct.*, Vol. 23, pp. 541-576 (1994)
45. Mirkin et al., "A DNA-based method for rationally assembling nanoparticles into macroscopic materials," *Nature*, Vol. 382, pp. 607-609 (1996)
46. Mirkin et al., "DNA-Induced Assembly of Gold Nanoparticles: A Method for Rationally Organizing Colloidal Particles into Ordered Macroscopic Materials," *Abstract 249*, Abstracts of Papers Part 1, 212 ACS National Meeting 0-8412-3402-7, American Chemical Society, Orlando, FL, August 25-29, 1996
47. Mucic et al., "Synthesis and characterizations of DNA with ferrocenyl groups attached to their 5'-termini: electrochemical characterization of a redox-active nucleotide monolayer," *Chem. Commun.*, pp. 555-557 (1996)
48. Mulvaney, "Surface Plasmon Spectroscopy of Nanosized Metal Particles," *Langmuir*, Vol. 12, pp. 788-800 (1996)
49. Rabke-Clemmer et al., "Analysis of Functionalized DNA Adsorption on Au(111) Using Electron Spectroscopy," *Langmuir*, Vol. 10, pp. 1796-1800 (1994)
50. Roubi, "MOLECULAR MACHINES – Nanodevice with rotating arms assembled from synthetic DNA," *Chemical & Engineering News*, p. 13, (Jan. 1999)
51. Seeman et al., "Synthetic DNA knots and catenanes," *New J. Chem.*, Vol. 17, pp. 739-755 (1993)
52. Shaw & Wang, "Knotting of a DNA Chain During Ring Closure," *Science*, Vol. 260, pp. 533-536 (1993)

53. Shekhtman et al., "Stereostructure of replicative DNA catenanes from eukaryotic cells," *New J. Chem.* Vol. 17, pp. 757-763 (1993)
54. Smith and Feigon, "Quadruplex structure of Oxytricha telomeric DNA oligonucleotides," *Nature*, Vol. 356, pp. 164-168 (1992)
55. Thein et al., "The use of synthetic oligonucleotides as specific hybridization probes in the diagnosis of genetic disorders," 2<sup>nd</sup> Ed., K.E. Davies, Ed., Oxford University Press, Oxford, New York, Tokyo, p. 21-33 (1993)
56. Wang et al., "Assembly and Characterization of Five-Arm and Six-Arm DNA Brached Junctions," *Biochem.*, Vol. 30, pp. 5667-5674 (1991)
57. Wang et al., "A DNA Aptamer Which Binds to and Inhibits Thrombin Exhibits a New Structural Motif for DNA," *Biochem.*, Vol. 32, pp. 1899-1904 (1993)
58. Weisbecker et al., "Molecular Self-Assembly of Aliphatic Thiols on Gold Colloids," *Langmuir*, Vol. 12, pp. 3763-3772 (1996)
59. Wells, "Unusual DNA Structures," *J. Biol. Chem.*, Vol. 263, pp. 1095-1098 (1988)
60. Zhang et al., "Informational Liposomes: Complexes Derived from Cholesteryl-conjugated Oligonucleotides and Liposomes," *Tetrahedron Lett.*, Vol. 37, pp. 6243-6246 (1996)

In accordance with MPEP Sections 609 and 707.05(b), it is requested that each document cited (including any cited in applicant's specification which is not repeated on the attached Form PTO-1449) be given thorough consideration and that it be cited of record in the prosecution history of the present application by initialing on Form PTO-1449. Such initialing is requested even if the Examiner does not consider a cited document to be sufficiently pertinent to use in a rejection, or otherwise does not consider it to be prior art for any reason, or even if the Examiner does not believe that the guidelines for citation have been fully complied with. This is requested so that each document becomes listed on the face of the patent issuing on the present application.

The present Disclosure Statement is being submitted in compliance with 37 CFR 1.56 insofar as an Examiner might consider any of the cited documents important in deciding whether to allow the application to issue as a patent, but the citation of each document is not to be construed as an admission that such document is necessarily relevant or prior art. No representation is intended that the cited documents represent the results of a complete search, and it is anticipated that the Examiner, in the normal course of examination, will make an independent search and will determine the best prior art consistent with 37 CFR 1.104(a) and 1.106(b) and, in the course of each search, will review for relevance every document cited on the attached form even if not initialed.

Early and favorable consideration is earnestly solicited.

Respectfully submitted,



---

Emily Miao  
Registration No. 35,285

Dated: \_\_\_\_\_

7/20/01

McDonnell Boehnen Hulbert & Berghoff  
300 South Wacker Drive  
Chicago, Illinois 60606  
Telephone: (312) 913-0001  
Facsimile: (312) 913-0002



Form PTO-1449

U.S. Department of Commerce  
Patent and Trademark Office

Atty. Docket No.

Serial No.

00-714-G

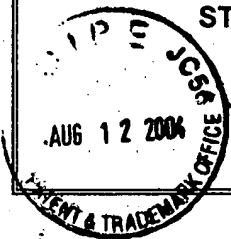
09/830,620

**INFORMATION DISCLOSURE  
STATEMENT BY APPLICANT**

Applicant: Chad A. Mirkin, et al.

Filing Date:  
November 30, 1999

Group:  
TBA



**U.S. PATENT DOCUMENTS**

Examiner Initial	Document Number	Date	Name	Class	Subclass	Filing Date
	1.	4,193,983	3/18/80	Ullman et al.		
	2.	4,256,834	3/17/81	Zuk et al.		
	3.	4,261,968	4/14/81	Ullman et al.		
	4.	4,313,734	2/2/82	Leuversing		
	5.	4,318,707	3/9/82	Litman et al.		
	6.	4,650,770	3/17/87	Liu et al.		
	7.	4,713,348	12/15/87	Ullman		
	8.	4,853,335	8/1/89	Olsen et al.		
	9.	4,868,104	9/19/89	Kum et al.		
	10.	5,225,064	7/6/93	Henkens et al.		
	11.	5,294,369	3/15/94	Shigekawa et al.		
	12.	5,384,073	1/24/95	Shigekawa et al.		
	13.	5,384,265	1/24/95	Kidwell et al.		
	14.	5,460,831	10/24/95	Kossovsky et al.		
	15.	5,472,881	12/5/95	Beebe et al.		
	16.	5,514,602	05/07/96	Brooks, Jr. et al.		
	17.	5,521,289	5/28/96	Hainfeld et al.		
	18.	5,543,158	8/6/96	Gref et al.		
	19.	5,571,726	11/05/96	Brooks, Jr. et al.		
	20.	5,665,582	9/9/97	Kaushch et al.		
	21.	5,681,943	10/28/97	Letsinger et al.		

**OTHER DOCUMENTS - Including Author, Title, Date, Pertinent Pages, Etc.**

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Examiner	Date Considered
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EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with any communication.

Form PTO-1449

S. Department of Commerce  
Patent and Trademark Office

Atty. Docket No.

Serial No.

00-714-G

09/830,620

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Applicant: Chad A. Mirkin, et al.

Filing Date:  
November 30, 1999Group:  
TBA**U.S. PATENT DOCUMENTS**

Examiner Initial	Document Number	Date	Name	Class	Subclass	Filing Date

**FOREIGN PATENT DOCUMENTS**

		Document Number	Date	Country	Class	Subclass	Translation	
							Yes	No
	22.	WO 89/06801	7/27/89	PCT				
	23.	WO 97/40181	10/30/97	PCT				
	24.	WO 98/04740	2/5/98	PCT				
	25.	WO 99/23258	10/30/98	PCT				
	26.	0 630 974 A2	06/21/94	EPO				
	27.	0 667 398 A2	8/16/95	EPO				

**OTHER DOCUMENTS - Including Author, Title, Date, Pertinent Pages, Etc.**

	28.	Alivisatos et al., "Organization of 'nanocrystal molecules' using DNA," <i>Nature</i> , Vol. 382, pp. 609-611 (1996)
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	31.	Brust et al., "Novel Gold-Dithiol Nano-Networks with Non-Metallic Electronic Properties," <i>Adv. Mater.</i> , Vol. 7, pp. 795-797 (1995)
	32.	Chen et al., "A Specific Quadrilateral Synthesized from DNA Branched Junctions," <i>J. Am. Chem. Soc.</i> , Vol. 111, pp. 6402-6407 (1989)
	33.	Chen & Seeman, "Synthesis from DNA of a molecule with the connectivity of a cube," <i>Nature</i> , Vol. 350, pp. 631-633 (1991)
	34.	Chen et al., "Crystal Structure of a Four-Stranded Intercalated DNA: d(C <sub>4</sub> ) <sup>††</sup> <i>Biochem.</i> , Vol. 33, pp. 13540-13546 (1994)
	35.	Dagani, "Supramolecular Assemblies DNA to organize gold nanoparticles," <i>Chemical &amp; Engineering News</i> , p. 6-7, August 19, 1996

Examiner

Date Considered

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Form PTO-1449

S. Department of Commerce  
Patent and Trademark Office

Atty. Docket No.

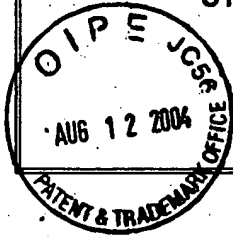
Serial No.

00-714-G

09/830,620

**INFORMATION DISCLOSURE  
STATEMENT BY APPLICANT**

Applicant: Chad A. Mirkin, et al.

Filing Date:  
November 30, 1999Group:  
TBA**U.S. PATENT DOCUMENTS**

Examiner Initial	Document Number	Date	Name	Class	Subclass	Filing Date

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36.	Dubois & Nuzzo, "Synthesis, Structure, and Properties of Model Organic Surfaces," <i>Annu. Rev. Phys. Chem.</i> , Vol. 43, pp. 437-464 (1992)
37.	Elghanian et al., "Selective Colorimetric Detection of Polynucleotides Based on the Distance-Dependent Optical Properties of Gold Nanoparticles," <i>Science</i> , Vol. 277, pp. 1078-1081 (1997)
38.	Grabar et al., "Preparation and Characterization of Au Colloid Monolayers," <i>Anal. Chem.</i> Vol. 67, pp. 735-743 (1995)
39.	Hacia et al., "Detection of heterozygous mutations in BRCA1 using high density oligonucleotide arrays and two-colour fluorescence analysis," <i>Nature Genet.</i> , Vol. 14, pp. 441-447 (1996)
40.	Jacoby, "Nanoparticles change color on binding to nucleotide target," <i>Chemical &amp; Engineering News</i> , p. 10, August 25, 1997
41.	Letsinger et al., "Use of Hydrophobic Substituents in Controlling Self-Assembly of Oligonucleotides," <i>J. Am. Chem. Soc.</i> , Vol. 115, pp. 7535-7536 (1993)
42.	Letsinger et al., "Control of Excimer Emission and Photochemistry of Stilbene Units by Oligonucleotide Hybridization," <i>J. Am. Chem. Soc.</i> , Vol. 116, pp. 811-812 (1994)
43.	Marsh et al., "A new DNA nanostructure, the G-wire, imaged by scanning probe microscopy," <i>Nucleic Acids Res.</i> , Vol. 23, pp. 696-700 (1995)
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Examiner	Date Considered

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Form PTO-1449

S. Department of Commerce  
Patent and Trademark Office

Atty. Docket No.

Serial No.

00-714-G

09/830,620

**INFORMATION DISCLOSURE  
STATEMENT BY APPLICANT**

Applicant: Chad A. Mirkin, et al.

Filing Date:  
November 30, 1999

Group:  
TBA



**U.S. PATENT DOCUMENTS**

Examiner Initial	Document Number	Date	Name	Class	Subclass	Filing Date

**FOREIGN PATENT DOCUMENTS**

	Document Number	Date	Country	Class	Subclass	Translation	
						Yes	No

**OTHER DOCUMENTS - Including Author, Title, Date, Pertinent Pages, Etc.**

50.	Roubi, "MOLECULAR MACHINES - Nanodevice with rotating arms assembled from synthetic DNA," <i>Chemical &amp; Engineering News</i> , p. 13, (Jan. 1999)
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54.	Smith and Feigon, "Quadruplex structure of Oxytricha telomeric DNA oligonucleotides," <i>Nature</i> , Vol. 356, pp. 164-168 (1992)
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57.	Wang et al., "A DNA Aptamer Which Binds to and Inhibits Thrombin Exhibits a New Structural Motif for DNA," <i>Biochem.</i> , Vol. 32, pp. 1899-1904 (1993)
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59.	Wells, "Unusual DNA Structures," <i>J. Biol. Chem.</i> , Vol. 263, pp. 1095-1098 (1988)
60.	Zhang et al., "Informational Liposomes: Complexes Derived from Cholesteryl-conjugated Oligonucleotides and Liposomes," <i>Tetrahedron Lett.</i> , Vol. 37, pp. 6243-6246 (1996)

Examiner	Date Considered
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Hon. Commissioner of Patents and Trademarks S/N 09/830,620

Atty: EM

Re: Applicant - Mirkin, et al.

Case No. 00-714-G

**NANOPARTICLES WITH POLYMER SHELLS**

Date Mailed: August 3, 2001

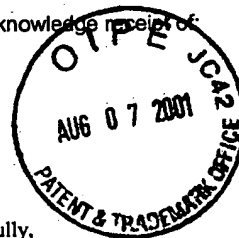
Sir:

Please place the Patent Office receipt stamp hereon and mail to acknowledge receipt of

- Transmittal Letter
- Information Disclosure Statement
- U.S. PTO Form 1449 with copies of 8 references

Fee Enclosed  
\$ 0.00

Respectfully,  
McDonnell Boehnen Hulbert & Berghoff  
Attorney for Applicant



JC20 Rec'd PCT/PTO 07 AUG 2001



PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
(Case No. 00-714-G)

In re Application of:	)	
	)	
Chad A. Mirkin, et al.	)	
	)	Examiner: TBA
Serial No.: 09/830,620	)	
	)	Group Art Unit: TBA
Filed: November 30, 1999	)	
	)	
For: NANOPARTICLES WITH POLYMER	)	
SHELLS	)	

**TRANSMITTAL LETTER**

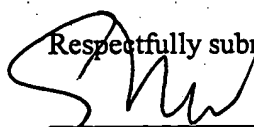
Commissioner for Patents  
Washington, D.C. 20231

Sir:

In regard to the above identified application.

1. We are transmitting herewith the attached:
  - a) Fifth Supplemental Information Disclosure Statement;
  - b) U.S. PTO 1449 Form with copies of 8 references; and
  - c) Return Postcard.
  
2. With respect to fees:
  - a) No fee is attached.
  - b) General Authorization: Please charge any underpayment or credit any overpayment our Deposit Account, No. 13-2490.
  
3. **CERTIFICATE OF MAILING UNDER 37 CFR § 1.8**: The undersigned hereby certifies that this Transmittal Letter and the paper, as described in paragraph 1 hereinabove, are being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to the Commissioner for Patents, Washington, D.C. 20231 on Aug. 3, 2001, 2001.

Date: 8/3/01

Respectfully submitted,  
  
 \_\_\_\_\_  
 Emily Miao  
 Registration No. 35,285



CERTIFICATE OF MAILING

I hereby certify that this paper and every paper referred to therein as being enclosed is being deposited with the U.S. Postal Service as first class mail, postage prepaid, in an envelope addressed to: Assistant Commissioner for Patents, Washington, DC 20231, on 8/3/99 (Date of Deposit). Date 8/3/99 Name [Signature]

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE (Case No. 00-714-G)

In the Application of: Chad A. Mirkin, et al., Serial No. 09/830,620 Filed: November 30, 1999 For: NANOPARTICLES WITH POLYMER SHELLS

Examiner: TBA Art Unit: TBA

Commissioner for Patents Washington, D.C. 20231

FIFTH SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT

Sir:

In order to comply with discretionary regulations 37 CFR §§1.97 and 1.98, attached hereto is Form PTO-1449, copies<sup>1</sup> of the documents listed thereon and fee pursuant to 37 C.F.R. 1.97(c). These documents contain information which the Examiner may consider to be important in deciding whether to allow the present application to issue as a patent.

<sup>1</sup>To the extent that a document is listed and no copy of same is attached, then such document is not at the present time available to the undersigned or is available in the file of a parent application. If a listed document is not in the English language and an English translation is readily available, such translation is also attached; if translation is not attached it is not readily available to the undersigned. If a foreign language patent document is cited, and an English language equivalent is known to the undersigned, then such equivalent patent is also cited on the attached form along with the corresponding foreign language patent and a connecting arrow indicated therebetween; if no such English language equivalent is cited, then none is known to undersigned.

### U.S. Patent Documents

1. Perronin et al., U.S. Patent No. 4,023,981, issued May 17, 1977
2. George H. Czerlinski, U.S. Patent No. 4,454,234, issued June 12, 1984
3. Akasaki, et al., U.S. Patent No. 4,846,893, issued June 11, 1989
4. Goto et al., U.S. Patent No. 5,053,471, issued October 1, 1991
5. Grubbs et al., U.S. Patent No. 5,342,909, issued August, 1994
6. Siiman et al., U.S. Patent No. 5,639,620, issued June 17, 1997
7. Uzan et al., U.S. Patent No. 5,736,413, issued April 7, 1998
8. Olli et al., U.S. Patent No. 5,766,764, issued June 16, 1998

In accordance with MPEP Sections 609 and 707.05(b), it is requested that each document cited (including any cited in applicant's specification which is not repeated on the attached Form PTO-1449) be given thorough consideration and that it be cited of record in the prosecution history of the present application by initialing on Form PTO-1449. Such initialing is requested even if the Examiner does not consider a cited document to be sufficiently pertinent to use in a rejection, or otherwise does not consider it to be prior art for any reason, or even if the Examiner does not believe that the guidelines for citation have been fully complied with. This is requested so that each document becomes listed on the face of the patent issuing on the present application.

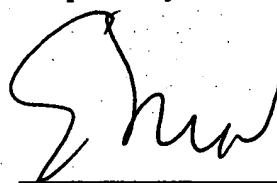
The present Disclosure Statement is being submitted in compliance with 37 CFR 1.56 insofar as an Examiner might consider any of the cited documents important in deciding whether to allow the application to issue as a patent, but the citation of each document is not to be construed as an admission that such document is necessarily relevant or prior art. No representation is intended that the cited documents represent the results of a complete search, and it is anticipated that the



Examiner, in the normal course of examination, will make an independent search and will determine the best prior art consistent with 37 CFR 1.104(a) and 1.106(b) and, in the course of each search, will review for relevance every document cited on the attached form even if not initialed.

Early and favorable consideration is earnestly solicited.

Respectfully submitted,



Emily Miao  
Registration No. 35,285

Dated: \_\_\_\_\_

8/3/01

McDonnell Boehnen Hulbert & Berghoff  
300 South Wacker Drive  
Chicago, Illinois 60606  
Telephone: (312) 913-0001  
Facsimile: (312) 913-0002

FORM PTO-1449  
(Rev. 2-32)

U.S. Department of Commerce  
Patent and Trademark Office

Atty. Docket No.

Serial No.

00-714-G

09/830,620



**INFORMATION DISCLOSURE  
STATEMENT BY APPLICANT**

(Use several sheets if necessary)

**Applicant:**

Chad A. Mirkin, et al

**Filing Date:**

November 30, 1999

**Group:**

TBA

**U.S. PATENT DOCUMENTS**

Examiner Initial	Document Number	Date	Name	Class	Subclass	Filing Date if Appropriate
	1. 4,023,981	05/17/77	Perronin, et al.			
	2. 4,454,234	06/12/84	George H. Czerlinski			
	3. 4,846,893	07/11/89	Akasaki, et al.			
	4. 5,053,471	10/01/91	Goto, et al.,			
	5. 5,342,909	08/30/94	Grubbs, et al.,			
	6. 5,639,620	06/17/97	Silman, et al.,			
	7. 5,736,413	04/07/98	Uzan, et al.			
	8. 5,766,764	06/16/98	Olli, et al.			

**FOREIGN PATENT DOCUMENTS**


	Document Number	Date	Country	Class	Subclass	Translation	
						Yes	No

**OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc).**

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EXAMINER	DATE CONSIDERED
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EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication.

FORM PTO-1449 (Rev. 2-32)	U.S. Department of Commerce Patent and Trademark Office	Atty. Docket No. 00-714-G	Serial No. 09/830,620
 <p style="margin-top: 10px;"><b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b></p> <p>(Use several sheets if necessary)</p>		Applicant: Chad A. Mirkin, et al	
		Filing Date: November 30, 1999	Group: TBA

**U.S. PATENT DOCUMENTS**

Examiner Initial	Serial No.	Document Number	Date	Name	Class	Subclass	Filing Date if Appropriate
	1.	4,023,981	05/17/77	Perronin, et al.			
	2.	4,454,234	06/12/84	George H. Czerlinski			
	3.	4,846,893	07/11/89	Akasaki, et al.			
	4.	5,053,471	10/01/91	Goto, et al.,			
	5.	5,342,909	08/30/94	Grubbs, et al.,			
	6.	5,639,620	06/17/97	Siiman, et al.,			
	7.	5,736,413	04/07/98	Uzan, et al.			
	8.	5,766,764	06/16/98	Olli, et al.			

**FOREIGN PATENT DOCUMENTS**

Serial No.	Document Number	Date	Country	Class	Subclass	Translation	
						Yes	No

**OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc).**

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EXAMINER	DATE CONSIDERED
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EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication.



Hon. Commissioner of  
Patents and Trademarks

S/N—09/830,620

Atty EM

Re: Applicant - Mirkin, et al.

Case No. 00-714-G

**NANOPARTICLE WITH POLYMER SHELLS**

Date Mailed: Sept. 29, 2003

Sir:

Please place the Patent Office receipt stamp hereon and mail to acknowledge receipt of:

- Transmittal Letter
- Twelfth Supplemental Information Disclosure Statement
- U.S. PTO 1449 Form with copies of 2 references
- Return Receipt Postcard

**Fee Enclosed**

\$0.00



Respectfully,

McDonnell Boehnen Hulbert & Berghoff  
Attorney for Applicant

EV333547870US



PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
(Case No. 00-714-G)

In re Application of:	)	
	)	
Chad A. Mirkin, et al.	)	
	)	Examiner: TBA
Serial No.: 09/830,620	)	
	)	Group Art Unit: 1713
Filed: November 30, 1999	)	
	)	Confirmation No.: 9430
For: NANOPARTICLES WITH	)	
POLYMER SHELLS	)	

**TRANSMITTAL LETTER**

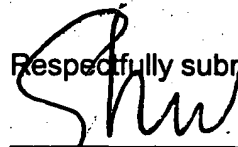
Commissioner for Patents  
P.O. Box 1450  
Alexandria, Virginia 22313-1450

Sir:

In regard to the above identified application.

1. We are transmitting herewith the attached:
  - a) Twelfth Supplemental Information Disclosure Statement;
  - b) U.S. PTO 1449 Form with copies of 2 references; and
  - c) Return Postcard.
2. With respect to additional fees:
3. **GENERAL AUTHORIZATION:** Please charge any additional fees or credit overpayment to Deposit Account No. 13-2490. A duplicate copy of this sheet is enclosed.
4. **CERTIFICATE OF MAILING UNDER 37 CFR § 1.10:** The undersigned hereby certifies that this Transmittal Letter and the paper, as described in paragraph 1 hereinabove, are being deposited with the United States Postal Service as "Express Mail Post Office to Addressee", addressed to the Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450 on this 29 day of September, 2003 under the Express Mail label No. EV333547870US.

Date: Sept. 29, 2003

Respectfully submitted,  
  
 \_\_\_\_\_  
 Emily Miao  
 Registration No. 35,285



PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
(Case No. 00-714-G)

In re Application of: )  
 )  
Chad A. Mirkin, et al. )  
 )  
Serial No.: 09/830,620 ) Examiner: TBA  
 )  
Filed: November 30, 1999 ) Group Art Unit: 1713  
 )  
For: NANOPARTICLES WITH ) Confirmation No.: 9430  
POLYMER SHELLS )

Commissioner for Patents  
P.O. Box 1450  
Alexandria, Virginia 22313-1450

**TWELFTH SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT**

Sir:

In order to comply with discretionary regulations 37 CFR §§1.97 and 1.98, attached hereto is Form PTO-1449, copies<sup>1</sup> of the documents listed thereon. These documents contain information which the Examiner may consider to be important in deciding whether to allow the present application to issue as a patent.

1. International application No. WO 97/00995, published 01/09/07
2. International Application No. WO 98/28368, published 07/02/98

In accordance with MPEP Sections 609 and 707.05(b), it is requested that each document cited (including any cited in applicant's specification which is not repeated on the attached Form PTO-1449) be given thorough consideration and that it be cited of

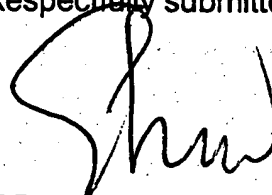
<sup>1</sup>To the extent that a document is listed and no copy of same is attached, then such document is not at the present time available to the undersigned or is available in the file of a parent application. If a listed document is not in the English language and an English translation is readily available, such translation is also attached; if translation is not attached it is not readily available to the undersigned. If a foreign language patent document is cited, and an English language equivalent is known to the undersigned, then such equivalent patent is also cited on the attached form along with the corresponding foreign language patent and a connecting arrow indicated there between; if no such English language equivalent is cited, then none is known to undersigned.

record in the prosecution history of the present application by initialing on Form PTO-1449. Such initialing is requested even if the Examiner does not consider a cited document to be sufficiently pertinent to use in a rejection, or otherwise does not consider it to be prior art for any reason, or even if the Examiner does not believe that the guidelines for citation have been fully complied with. This is requested so that each document becomes listed on the face of the patent issuing on the present application.

The present Disclosure Statement is being submitted in compliance with 37 CFR 1.56 insofar as an Examiner might consider any of the cited documents important in deciding whether to allow the application to issue as a patent, but the citation of each document is not to be construed as an admission that such document is necessarily relevant or prior art. No representation is intended that the cited documents represent the results of a complete search, and it is anticipated that the Examiner, in the normal course of examination, will make an independent search and will determine the best prior art consistent with 37 CFR 1.104(a) and 1.106(b) and, in the course of each search, will review for relevance every document cited on the attached form even if not initialed.

Early and favorable consideration is earnestly solicited.

Respectfully submitted,



Emily Miao  
Registration No. 35,285

Dated: Sept. 29, 2003

McDonnell Boehnen Hulbert & Berghoff  
300 South Wacker Drive, Suite 3200  
Chicago, Illinois 60606  
Telephone : (312) 913-0001  
Facsimile: (312) 913-0002

FORM PTO-1449  
(Rev. 2-32)

U.S. Department of Commerce  
Patent and Trademark Office

Atty. Docket No.

Serial No.

00-714-G

09/830,620



**INFORMATION DISCLOSURE  
STATEMENT BY APPLICANT**

(Use several sheets if necessary)

**Applicant:**

Chad A. Mirkin, et al.

**Filing Date:**

November 30, 1999

**Group:**

1713

**U.S. PATENT DOCUMENTS**

Examiner Initial	Document Number	Date	Name	Class	Subclass	Filing Date if Appropriate

**FOREIGN PATENT DOCUMENTS**

		Document Number	Date	Country	Class	Subclass	Translation	
							Yes	No
1.	WO 97/00995	9 January 1997	PCT					
2.	WO 98/28368	2 July 1998	PCT					

**OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc).**


EXAMINER

DATE CONSIDERED

EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication.





Hon. Commissioner of  
Patents and Trademarks

S/N—09/830,620

Atty EM

Re: Applicant - Mirkin, et al.

Case No. 00-714-G

**NANOPARTICLE WITH POLYMER SHELLS**

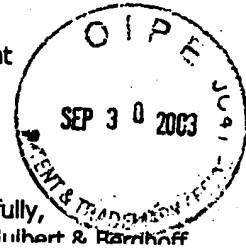
Date Mailed: SEP 30, 2003

Sir:

Please place the Patent Office receipt stamp hereon and mail to acknowledge receipt of:

- Transmittal Letter
- Thirteenth Supplemental Information Disclosure Statement
- U.S. PTO 1449 Form with copies of 6 references
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**Fee Enclosed**  
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Respectfully,  
McDonnell Boehnen Hulbert & Berthoff



PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
(Case No. 00-714-G)

In re Application of: )  
)  
Chad A. Mirkin, et al. )  
) Examiner: TBA  
Serial No.: 09/830,620 )  
) Group Art Unit: 1713  
Filed: November 30, 1999 )  
) Confirmation No.: 9430  
For: NANOPARTICLES WITH )  
POLYMER SHELLS )

TRANSMITTAL LETTER

Commissioner for Patents  
P.O. Box 1450  
Alexandria, Virginia 22313-1450

Sir:

In regard to the above identified application.

1. We are transmitting herewith the attached:
  - a) Thirteenth Supplemental Information Disclosure Statement;
  - b) U.S. PTO 1449 Form with copies of 6 references; and
  - c) Return Postcard.
2. With respect to additional fees:
3. GENERAL AUTHORIZATION: Please charge any additional fees or credit overpayment to Deposit Account No. 13-2490. A duplicate copy of this sheet is enclosed.
4. CERTIFICATE OF MAILING UNDER 37 CFR § 1.10: The undersigned hereby certifies that this Transmittal Letter and the paper, as described in paragraph 1 hereinabove, are being deposited with the United States Postal Service as "Express Mail Post Office to Addressee", addressed to the Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450 on this 30 day of September, 2003 under the Express Mail label No. EV333547968US.

Date: Sept. 30, 2003

Respectfully submitted,

  
\_\_\_\_\_  
Emily Miao  
Registration No. 35,285



PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
(Case No. 00-714-G)

In re Application of: )  
)  
Chad A. Mirkin, et al. )  
) Examiner: TBA  
Serial No.: 09/830,620 )  
) Group Art Unit: 1713  
Filed: November 30, 1999 )  
) Confirmation No.: 9430  
For: NANOPARTICLES WITH )  
POLYMER SHELLS )

Commissioner for Patents  
P.O. Box 1450  
Alexandria, Virginia 22313-1450

**THIRTEENTH SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT**

Sir:

In order to comply with discretionary regulations 37 CFR §§1.97 and 1.98, attached hereto is Form PTO-1449, copies<sup>1</sup> of the documents listed thereon. These documents contain information which the Examiner may consider to be important in deciding whether to allow the present application to issue as a patent.

1. Teoule et al., U.S. Patent No. 5,837,859, issued 11/17/98
2. Marchand et al., U.S. Patent No. 6,160,103
3. International Application No. WO 00/33079, published 06/08/00
4. Japanese Application No. 231556, published 08/28/01 (Abstract)
5. Fraser C., et al., "Synthesis of Glycopolymers of Controlled Molecular Weight by Ring-Opening Metathesis Polymerization Using Well-Defined Functional Group Tolerant Tuthenium Carbene Caatalysts," *Macromolecules*, Volume 28, No. 21, p. 7248-7254 (1995)

<sup>1</sup>To the extent that a document is listed and no copy of same is attached, then such document is not at the present time available to the undersigned or is available in the file of a parent application. If a listed document is not in the English language and an English translation is readily available, such translation is also attached; if translation is not attached it is not readily available to the undersigned. If a foreign language patent document is cited, and an English language equivalent is known to the undersigned, then such equivalent patent is also cited on the attached form along with the corresponding foreign language patent and a connecting arrow indicated there between; if no such English language equivalent is cited, then none is known to undersigned.

6. Sinner, F., et al., "A New Class of Continuous Polymer Supports Prepared by Ring-Opening Metathesis Polymerization: A straightforward Route to Functionalized Monoliths," *Macromolecules*, Vol. 33, p. 5777-5785 (2000).

In accordance with MPEP Sections 609 and 707.05(b), it is requested that each document cited (including any cited in applicant's specification which is not repeated on the attached Form PTO-1449) be given thorough consideration and that it be cited of record in the prosecution history of the present application by initialing on Form PTO-1449. Such initialing is requested even if the Examiner does not consider a cited document to be sufficiently pertinent to use in a rejection, or otherwise does not consider it to be prior art for any reason, or even if the Examiner does not believe that the guidelines for citation have been fully complied with. This is requested so that each document becomes listed on the face of the patent issuing on the present application.

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Early and favorable consideration is earnestly solicited.

Dated: Sept. 30, 2003

  
Respectfully submitted,

\_\_\_\_\_  
Emily Miao  
Registration No. 35,285

McDonnell Boehnen Hulbert & Berghoff  
300 South Wacker Drive, Suite 3200  
Chicago, Illinois 60606  
Telephone: (312) 913-0001  
Facsimile: (312) 913-0002

FORM PTO-1449  
(Rev. 2-32)

U.S. Department of Commerce  
Patent and Trademark Office

Atty. Docket No.

Serial No.

00-714-G

09/830,620

INFORMATION DISCLOSURE  
STATEMENT BY APPLICANT

(Use several sheets if necessary)



Applicant:

Chad A. Mirkin, et al.

Filing Date:

November 30, 1999

Group:

1713

U.S. PATENT DOCUMENTS

Examiner Initial	Document Number	Date	Name	Class	Subclass	Filing Date if Appropriate
1.	5,837,859	11/17/98	Teoulé et al.	536	25.3	03/30/94
2.	6,160,103	12/12/00	Marchand et al.	536	23.1	06/25/97

FOREIGN PATENT DOCUMENTS

	Document Number	Date	Country	Class	Subclass	Translation	
						Yes	No
3.	WO 00/33079	8 June 2000	PCT				
4.	231556	28 August 2001	Japan				

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc).

5.	Fraser, C., et al., "Synthesis of Glycopolymers of Controlled Molecular Weight by Ring-Opening Metathesis Polymerization Using Well-Defined Functional Group Tolerant Tuthenium Carbene Catalysts," <i>Macromolecules</i> , Volume 28, No. 21, p. 7248-7254 (1995)
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EXAMINER	DATE CONSIDERED
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EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication.

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